Science

Prep.3

First Term 2020

Final Revision

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Final Revision

❋ (1) Write the scientific term :

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1)	The distance moved through a unit time.	(..................................)
2)	The combination of the male gamete and female gamete to form a zygote.	(..................................)
3)	The space which contains all the galaxies, stars, planets and living organisms.	(..................................)
4)	The regular speed by which the object moves to cover equal distances at the same period of time.	(..................................)
5)	An optical piece is thin at its center and more thick at the tips and diverging light rays falling on it.	(..................................)
6)	Asexual reproduction takes place in some plants without needing seeds but through their vegetative organs.	(..................................)
7)	A group of stars that rotate together in cosmic space by the effect of gravity.	(..................................)
8)	The angle between the reflected light ray and the normal line at the point of incidence on the reflecting surface.	(..................................)
9)	Fusion of the male gamete and the female gamete to form the zygote.	(..................................)
10)	The speed of an object relative to an observer.	(..................................)
11)	The force that controls the orbits of the planets around the Sun according to the modern theory.	(..................................)
12)	Specialized cells which produce gametes.	(..................................)
13)	Changing the position of an object as the time passes according to a fixed point.	(..................................)
14)	A point inside the lens that lies on the principal axis at mid distance between the faces of the lens.	(..................................)
15)	Something that includes all galaxies , stars, planets and living organisms.	(..................................)
16)	The rebounding of the light to the same side when it strikes a reflecting surface.	(..................................)

17)	It is located in one of the spiral arms of the Milky Way galaxy on the edge of the galaxy.	(................................)
18)	A medical case as a result of the formation of the image behind the retina.	(................................)
19)	The total distance that a moving object covers divided by total time taken to cover this distance.	(................................)
20)	The object's speed changes (increases or decreases) by equal values through equal periods of times.	(................................)
21)	A biological process, where the living organism produces new individuals of the same kind and thus, ensuring its continuity.	(................................)
22)	The angle between the incident light ray and the perpendicular line on the reflecting surface from the point of incidence.	(................................)
23)	The nucleic acid that carries the genetic traits of the living organism.	(................................)
24)	A mirror, always forms a diminished image for the object.	(................................)
25)	The displacement in one second.	(................................)
26)	Groups of stars gathered in distinctive shape.	(................................)
27)	The ability of some animals to compensate their missing parts.	(................................)
28)	The point of connection of the two chromatids in a chromosome.	(................................)
29)	line that passes through the optical center of the lens without passing through the two centers of curvature of its faces .	(................................)
30)	The distance between the pole of a spherical mirror and its center of curvature.	(................................)
31)	The speed of a moving body that covers equal distances at unequal time intervals.	(................................)
32)	The speed of a moving object relatively to a constant or a moving observer.	(................................)
33)	The mirror, whose reflecting surface is a part of the inner surface the sphere.	(................................)
34)	A point inside the lens lies on the principal axis in the mid distance between its faces.	(................................)
35)	The nucleic acid that carries the genetic traits of the living organisms.	(................................)
36)	Bouncing of the light to the same side when it strikes a reflecting surface.	(................................)

37)	The straight line that passes by center of curvature of the mirror and its pole.	(.................................)
38)	A glowing gaseous sphere formed the planets of the solar system.	(.................................)
39)	It's a mirror that its reflecting surface is a part of a hallow sphere.	(.................................)
40)	The change in the position of an object by the time relative to a reference point.	(.................................)
41)	The mid-point on the reflecting surface of the mirror.	(.................................)
42)	The part in the cell which is responsible for cellular division .	(.................................)
43)	The incident light ray, the reflected light ray and the normal line all lie in the same plane perpendicular to the reflecting surface.	(.................................)
44)	The combination of a male gamete and a female gamete to from a zygote.	(.................................)
45)	The total distance covered by the moving object divided by the total time taken to cover the distance .	(.................................)
46)	A type of asexual reproduction that occurs in simple algae.	(.................................)
47)	A phase in which some important vital processes occur to prepare the cell for division and the amount of genetic material duplicates.	(.................................)
48)	It is the ability of some animals to compensate their missing parts.	(.................................)
49)	It is a theory that explains the origin of the universe from a massive explosion since 15000 million years .	(.................................)
50)	The mass of cells which result from the abnormal cell when it is continually divided without controlling.	(.................................)
51)	Biological process where the living organism produces new individuals of the same kind and thus, ensuring its continuity.	(.................................)
52)	It is a very thin plastic lenses and can stick to the eye cornea.	(.................................)
53)	It is the regular speed by which the object moves to cover the same distance at the same period of time.	(.................................)
54)	A disease that infects the eye lens and it becomes opaque.	(.................................)
55)	A vector quantity that equals the displacement in one second.	(.................................)

56)	Chemically consists of DNA and protein.	(..................................)
57)	A physical quantity that represents change in the object speed in unit time.	(..................................)
58)	Fibers extend between the two poles of the cell in prophase.	(..................................)
59)	The image that cannot be received on the screen.	(..................................)
60)	A theory assumed that the solar system was originally a big star which is the Sun.	(..................................)
61)	A flat gaseous round disk that formed the solar system planets according to the perception of "Laplace" scientist.	(..................................)
62)	A cell division that occurs in the somatic cells and results in the growth of the living organism.	(..................................)
63)	The actual length of the path that a moving object takes from the starting point of movement to the end point.	(..................................)
64)	It is located in one of the spiral arms of the Milky Way on the edge of the galaxy.	(..................................)
65)	The line between the two centres of curvature of the lens passing by the optical centre of the lens.	(..................................)
66)	The phase which the cell prepares to division by the genetic material (DNA) duplicates.	(..................................)
67)	The displacement covered through a unit time .	(..................................)
68)	The point of connection of two chromatids of the chromosome together.	(..................................)
69)	A type of asexual reproduction that takes place in plants' vegetative organs without the need of seeds.	(..................................)
70)	A theory based on an astronomical phenomenon in which a star was glowing for a short time , and then its glowing disappears gradually.	(..................................)
71)	The value of an object's speed relative to the observer.	(..................................)
72)	The total distance covered by a moving body divided by the total time.	(..................................)
73)	The physical quantity that has magnitude only and has no direction .	(..................................)
74)	An optical piece is thin at its center and more thick at the tips and diverging light rays falling on it.	(..................................)

75) A mirror can be used to get virtual, upright and magnified image of an object. (..................................)

76) Angle of incidence of the light ray equals its angle of reflection. (..................................)

77) A mirror used to form virtual, upright and diminished image. (..................................)

78) The line that joins between the two centres of curvature of the lens passing by the optical centre of the lens. (..................................)

79) Half the diameter of the sphere, where the face of the lens is a part of it. (..................................)

80) The straight line that passes by the centre of curvature of the mirror and any point on its surface except its pole. (..................................)

81) It is the point of collection of the refracted light rays or their extensions which are produced, when the light rays fall parallel to the principal axis of a lens. (..................................)

82) Seeing the near objects clearly and seeing the far objects distorted. (..................................)

83) A flat gaseous round disk that formed the solar system. (..................................)

84) The biggest star that can be seen by people clearly on the Earth. (..................................)

85) The scientist who established the nebula theory. (..................................)

86) A theory assumed that the solar system was originally the Sun. (..................................)

87) The unit which is used for measuring the distance between celestial bodies. (..................................)

88) It is a wide and extended space that contains all the galaxies, stars and planets. (..................................)

89) A theory explains the origin of the universe from a massive explosion since 15000 million years. (..................................)

90) The theory that is explained the formation of the galaxies and the stars. (..................................)

✳(2) Choose the right answer:

1. The crossing over phenomenon takes place at the end of ....
    a. prophase I.   b. metaphase I.   c. anaphase I.   d. telophase I.

2. A body of length 4 cm is placed at a distance of 8 cm from a convex mirror, so the length of the formed image becomes ....
    a. 16 cm.   b. 8 cm.   c. 4 cm.   d. less than 4 cm.

3. The ability of some animals to compensate their missing parts is called the ....
    a. budding.   b. regeneration.   c. sporogony.   d. sexual reproduction.

4. The line between the centers of curvature of the lens passing by the optical centre of the lens is called the ....
    a. focal length.   b. principal axis.   c. secondary axis.   d. radius of curvature.

5. If the speed of a car is 72 km/hour, this means that its speed equals .... _m/s_.
    a. 18   b. 20   c. 40

6. The spindle filaments appear during cell division in ....
    a. telophase .   b. interphase.   c . prophase.

7. The image of the object that lies at the centre of curvature of a concave mirror is ...
    a. real, inverted and enlarged.
    b. real , upright and equal to the object.
    c. real, inverted and equal to the object.
    d. virtual, upright and equal to the object.

8. If the chromosomal number in the male gamete of an organism is 20 so, the chromosomal number in the liver cell equals ....
    a. 5 chromosomes.   b. 10 chromosomes.   c. 20 chromosomes.   d. 40 chromosomes.

9. .... established the crossing star theory.
    a. Laplace   b. Fred Hoyle   c. Hubble   d. Chamberlain

10. The centromere of each chromosome divides longitudinally and the spindle fibers contract in mitosis during ....
    a. prophase.   b. metaphase.   c. anaphase.   d. telophase.

11. The number of chromosomes in the gamete is .... the number of chromosomes in the original cell.
    a. equal to   b. half   c. quarter   d. double

12. When the body covers equal distances at unequal periods of time, the speed will be ...
    a. regular.   b. decelerated.   c. accelerated.   d. irregular.

13. All the following cells contain full copy of genetic material except ....
    a. spore.   b. bud.   c. zygote.   d. pollen grain.

14. The uniform acceleration means that the object speed .... by equal values through equal periods of time.
    a. increases only   b. decreases only
    c. increases or decreases   d. doesn't change

15. From the scalar physical quantities is the ....

    a. acceleration.   b. time.   c. velocity.   d. displacement.

16. The object moves at a constant (uniform) speed when ....

    a. it moves at a constant acceleration.

    b. it covers equal distances at unequal times.

    c. it covers equal distances at equal times.

    d. no correct answer.

17. A concave mirror with a focal length of 20 cm, and the object is placed at a distance of 50 cm from the mirror, the image is formed at a distance ....

    a. more than 40 cm.   b. more than 20 cm and less than 40 cm.

    c. equals 20 cm.   d. equals 60 cm.

18. The centromere of each chromosome is divided longitudinally, then the two chromatids are separated from each other in the ....

    a. prophase.   b. metaphase.   c. anaphase .   d. telophase.

19. Yeast fungus reproduces asexually by ....

    a. regeneration.   b. binary fission.   c. budding.   d. spore.

20. The solar system consists of the Sun and .... planets revolve around it.

    a. 7   b. 8   c. 9   d. 10

21. The image formed by .... is always virtual, erect and small.

    a. convex lens   b. concave mirror

    c. plane mirror   d. convex mirror and concave lens

22. The speed of a moving object relative to the observer is considered as .... speed.

    a. regular   b. average   c. vector   d. relative

23. If an object at a distance of 3 metres from a plane mirror. The distance between that object and its image is .... metre.

    a. 3   b. 6   c. 9   d. 12

24. If the number of chromosomes in liver cells of a certain living organism is (32) chromosomes then the number of chromosomes in ovum cell is ....

    a. 8   b. 16   c. 24   d. 32

25. The optical piece which forms laterally inverted (reversed) image and equal to the body is ....

    a. convex lens   b. concave lens   c. spherical mirror   d. plane mirror.

26. When a moving object covers equal distances in unequal intervals of time, so it moves by ....

    a. average speed.   b. relative speed.   c. uniforms speed.   d. irregular speed.

27. The scientist who published a research including his vision about the Nebular assumption ....

    a. Chamberlin.   b. Laplace.   c. Fred Hoyle.   d. Molten.

28. An object was put at 10 cm from a concave mirror, a real, inverted and equal image was formed, if the object moved 3 cm towards the mirror, so the formed image will be ....
   a. real, inverted and diminished.   b. real, inverted and enlarged.
   c. virtual diminished.   d. virtual enlarged.

29. An observer in a moving car with 80 km/h was observing a moving car with 90 km/h in the same direction so, the observed speed of the 2nd car is ....
   a. 10 km/h . b. 80 km/h. c. 90 km/h. d. 170 km/h.

30. The .... is the phase in which the cell is prepared for division by doubling the genetic material .
   a. prophase b. interphase c. metaphase d. anaphase

31. A concave mirror has a focal length of 8 cm. An object is placed in front of this mirror forming an image at a distance 20 cm from the mirror. This means that the object is placed at .... from the mirror.
   a. 8 cm.   b. less than 8 cm.
   c. 20 cm.   d. more than 8 cm. and less than 16 me.

32. A doctor advised a person who has a sight defect to use glasses with convex lenses. It means that this person suffers from ....
   a. a decrease in the convexity of the eye lens surface.
   b. an increase in the convexity of eye lens surface.
   c. an increase in the eyeball diameter.
   d. disability of seeing far objects clearly.

33. Reproduction by spores occurs in all the following organisms, except ....
   a. starfish. b. fungus. c. bread mould. d. mushroom.

34. One of the vector physical quantities is ....
   a. time of a car trip.   b. length of a pen.
   c. mass of a cat.   d. force by which person pushes a stone.

35. The ratio between initial speed and final speed for a moving object by increasing accelerations is ....
   a. more than one.   b. less than one.
   c. equal to one.   d. equal zero.

36. A short sighted person sees the far objects distorted as their images formed ....
   a. on the retina.   b. behind the retina.
   c. in front of the retina.   d . in front of the lens .

37. From examples of the scalar physical quantities is ....
   a. the velocity. b. the mass. c. the force . d. the acceleration.

38. The cell that never divide is ....
   a. adult red blood cells.   b. the stomach.
   c. the liver.   d. the skin.

39. Paramecium is a protozoan that reproduces by ....
a. spores.   b. budding .   c. regeneration.   d. binary fission .

40. reproduction which considered as a source of genetic variation is ……. reproduction.
a. vegetative   b. budding   c. sexual   d. regeneration

41. The scientist who established the nebular theory is ....
a. Chamberlain .   b. Moulton.   c. Fred Hoyle.   d . Laplace.

42. (Speed - time) graph for a regular motion at a constant speed is a straight line is ......
a. curved .
b. passing by the origin point.
c. parallel to x-axis.
d. parallel to y-axis.

43. When an object is placed to face a convex mirror, the image formed is ....
a. lies behind the mirror.
b. is real.
c. is erect.
d. (a) and (c).

44. Fred Hoyle relates controlling the Sun in the orbits of the planets around it to .... of the Sun.
a. temperature   b. rotation speed   c. attraction force   d. glowing

45. The chemical structure of the chromosome is ....
a. the nucleic acid only.
b. protein and nucleic acid.
c. protein, fats and nucleic acid.
d. all the previous.

46. The two gases which produced galaxies, stars and universe through millions of years are ....
a. oxygen & helium.
b. helium & hydrogen.
c. oxygen & carbon dioxide.
d. helium & carbon dioxide.

47. The universe contains ....
a. galaxies & stars.
b. planets and moons .
c. living organisms.
d . all the previous.

48. From the properties of the image formed by a convex mirror is ....
a. virtual.   b. real.   c. upright.   d. (a) and (c) together.

49. If a person stands at a distance 2 m from a plane mirror, the distance between the person and his image is ....
a. 1 m.   b. 2 m.   c. 3 m.   d. 4 m.

50. The value of change of an object speed in one second is called ....
a. velocity.   b. displacement.   c. acceleration.   d. speed.

51. Our solar system is located in one of the .... arms of the Milky way galaxy.
a. spiral   b. straight   c. circular   d. oval

52. The distance from the center of mirror curvature and its focus equals ....
a. radius of curvature.
b. quarter of the diameter of curvature.
c. diameter of curvature.
d. half of the focal length.

53. From the scalar quantities ....
a. the time.   b. the force.   c. the acceleration.   d . the displacement.

54. Spindle fibers appear during the cell division in the ....

     a. telophase.   b. interphase.   c. prophase.   d. metaphase.

55. When an object acceleration equal zero this means that ....

     a. the body acceleration is decreasing.   b. the body speed is variable.

     c. the body acceleration is increasing.   d. the body speed is uniform.

56. Meiotic division in flowering plants occurs in the anther to produce ....

     a. ovum.   b. chromosome.   c. pollen grains.   d. sperm.

57. Within minutes of the Big Bang, the percentage of hydrogen in the universe was ......

     a. 25%   b. 50%   c. 75%   d. 100%

58. If the speed of a car is 36 km/h , it means that its speed is .... m/sec.

     a. 10   b. 20   c. 40   d. 80

59. The distance and displacement are equal when the body moves in a ....in one direction.

     a. zigzag   b. circular   c. straight line   d. curved

60. If the distance between two centers of curvatures to the lens is 20 cm. so its focal length equal ....

     a. 5 cm.   b. 10 cm.   c. 15 cm.   d. 20 cm.

61. ratio between final and initial speed for moving body with accelerating motion ....

     a. more than one.   b. less than one.   c. equal to one.   d. equal zero.

62. The scientist who founds modem theory of the world is . ...

     a. Fred Hoyle.   b. Laplace   c. Moulten.

63. The two factors in which the movement of an object can be described ....

     a. speed and time.   b. distance and time.   c. area and time.

64. Property of the image of the object formed by the plane mirror always be ....

     a. larger than the object.   b. equal to the object.   c. smaller than the object.

65. scientists believe that the universe emerged from massive explosion and it is in ....

     a. continues contraction.   b. contraction then expansion.

     c. expansion then contraction.   d. continues expansion .

66. If a light ray falls passing through the optical centre of the convex lens, it leaves the lens ....

     a. passing through the focus.   b. parallel to the principal axis.   c . without refraction.

67. The continuous expansion of the universe, is due to ....

     a. separation of galaxies.   b. approaching of galaxies.   c. equivalent to galaxies.

68. The founder of modern theory of the solar system is .... scientist.

     a. Moulten   b. Chamberlain   c. Fred Hoyle

69. The image formed by using a concave lens is ....
   a. real , enlarged, and inverted.
   b. virtual, smaller and inverted.
   c . virtual, smaller and upright.

70. At the end of this phase, the nucleolus and nuclear membrane disappear from the mitosis division ....
   a. prophase.   b. metaphase.   c. telophase.

71. When an object is placed between the focus of a convex lens and its center of curvature, the formed image will be ....
   a. real, inverted and diminished.   b. real, inverted and magnified.
   c. virtual, erect and magnified.   d. virtual, erect and diminished.

72. The result of multiplying a speed of moving object by time ....
   a. acceleration.   b. mass .   c. distance.   d. force.

73. .... began to form after 3000 million years after the Big Bang.
   a. galaxies.   b. ancestral galaxies.   c. the Sun.   d. the Earth.

74. If the length of the radius of curvature of concave mirror 20 cm, then the focal length of the mirror equals ....
   a. 5   b. 10   c. 15   d . 20

75. The Milky Way galaxy took its disc form after about .... million years after the Big Bang.
   a. 1000   b. 3000   c. 5000   d. 10000

76. From the examples of the vector physical quantities is ....
   a. time.   b. force .   c. mass.   d. length.

77. The optical piece which forms an image that inverted and equal to the object is ....
   a. concave lens.   b. concave mirror.
   c. convex mirror.   d. plane mirror.

78. The nucleolus disappears during the mitosis cell division in ....
   a. prophase.   b. metaphase.   c. anaphase.   d. telophase.

79. (Distance - time) graph for an object moves at regular speed is represented by a straight line ....
   a. parallel to time axis.   b. parallel to distance axis .
   c. passing through the origin point.   d. (a) and (c) together.

80. The source of genetic variation is the .... reproduction.
   a. budding   b. vegetative.   c. sexual.   d . regeneration.

✸(3) Complete the following :

1. The Sun and the surrounding planets revolve around the center of .... galaxy.

2. Mitosis occurs in the .... cells of living organisms .

3. Distance is a .... physical quantity, while force is a .... physical quantity.

4. The scientist who established the modern theory about the evolution of the solar system is ....

5. The distance that a moving object covers within a unit time is known as ....

6. The incident light ray which is parallel to the principal axis of a concave mirror reflects passing through ....

7. The scientists believe that the matter of the universe was a .... ball of high pressure and high temperature.

8. The long-sighted person needs glasses of .... lens.

9. Vegetative reproduction in plants happens by .... division.

10. .... scientist who founded the nebular theory.

11. The spindle fibers are formed during the cell division in ....

12. .... are formed of groups of stars in the universe.

13. Acceleration is considered one of .... physical quantities , while time is considered one of .... physical quantities.

14. The solar system is located in one the .... arms of the Milky Way on the edge of the galaxy.

15. Somatic cells are divided by .... , while reproductive cells are divided by ....

16. In Milky Way galaxy, the old stars (the older) gather in the .... of the galaxy.

17. Parental individual disappears when reproduction occurs in ....

18. The incident light ray that passes through the focus of the convex lens, it exits from the lens ....

19. Mass is considered from .... physical quantity.

20. From the scalar physical quantities is ...., while .... is from the vector physical quantities.

21. Condensing the cytoplasm in the two poles of the plant cells forms ....

22. Crossing over phenomenon happens between the .... during the meiosis division.

23. In human and animals, meiosis occurs in .... to produce the male gametes, while it occurs in .... to produce the female gametes.

24. vision defect which is due to the decrease in the eyeball diameter is called .... and is corrected by .... lenses .

25. The two factors which can be used to describe the motion of a body are the.................... and ....

26. The Big Bang theory explain the origin of .... , while the nebular theory is one of the theories which explain the origin of ....

27. In animal cell spindle fibers formed from .... , while in plant cell spindle fibers form .... at the poles.

28. The product of the velocity of moving body x the time equal ....

29. The galaxy that solar system belongs to is called ....

30. The image formed by concave lens is always .... erect and diminished.

31. The nucleolus and nuclear membrane disappear at the end of .... of mitosis.

32. The change of an object position as time passes according to the position of another fixed object is called ....

33. The contact lenses are used instead of the .... and it is made of ....

34. The convex lens .... the light, while the convex mirror . ... the light.

35. The solar system is located in one of the spiral arms of the .... on the ....

36. movement path in one direction may be .... , ... or a combination of both .

37. The cell .... contains the genetic material of the living organism which consists of a number of ....

38. When the object lies in front of .... lens, a virtual and diminished image is formed.

39. The yeast fungus reproduces by .... , while the starfish reproduces by ....

40. The .... scientist established the modern theory of evolution of the solar system.

41. The Egyptian scientist Mustafa El Said discovered a way to detect the cancer cell by using ....

42. A short-sighted person needs a medical eye glasses with .... lenses .

43. The chromosome chemically consists of nuclear acid called DNA and ....

44. The spindle fibers in the animal cell is formed from ...., while in the plant cell the spindle is composed form the .... at the cell poles.

45. From the examples of the multicellular organisms reproduced by budding is ....

46. The point that lies in the middle of the reflecting surface of the concave mirror is called ....

47. The displacement covered by a body in one second is called ....

48. Speed measuring unit is .... , while the measuring unit of acceleration is ....

49. The crossing over phenomenon occurs in .... of .... division .

50. .... and .... are types of spherical mirrors.

51. The Sun and the planets revolving around it, rotate around the center of .... galaxy.

52. .... reproduction doesn't required neither special systems nor structures in the living organisms.

53. .... are used instead of medical glasses to treat vision defects.

54. When the object is placed at .... of the convex lenses, there is no image will be formed.

55. The moving car with 50 Km/h in constant direction its speed appears at 110 Km/h related to observer moves with 60 Km/h in .... direction of the car motion.

56. The crossing over phenomenon occurs in .... of first meiosis division.

57. The solar system consists of a number of .... planets revolve around the Sun.

58. The physical quantity that its magnitude and direction are necessary for identifying it is called ....

59. A concave mirror has a focal length of 20 cm , then the radius of curvature of its spherical surface equals ....

60. Correcting long-sightedness by using .... lens and correcting short-sightedness by using .... lens.

61. Yeast fungus reproduces asexually by ...., while the amoeba reproduces asexually by ....

62. .... image can be received on a screen .

63. The stars move in a fixed orbit around the center of the ....

64. The measuring unit of acceleration is ....

65. Asexual reproduction takes place by .... in the yeast fungus.

66. We use .... lens to obtain a virtual and magnified image.

67. The straight distance covered by the object in a certain direction is called ....

68. The .... telescope is from the space telescopes.

69. The spindle fibers are formed during the cell division in ....

70. The double of the distance between the optical center of a lens and its focus= ....

71. The velocity is the .... in one second.

72. Force is considered .... physical quantity and mass is considered .... physical quantity.

73. two factors which can be used to describe the motion of the body are .... and ....

74. The (speed - time) graph of motion at uniform speed is represented by a .... line

75. The product of the speed of the body x the time = ...

76. If the body moves from rest, so its initial speed equals ....

77. .... is the change of an object's position as time passes according to the position of another object.

78. The graphical relation (speed - time) for regular motion at uniform speed is represented by a straight line . ... to the time axis.

79. The secondary axis of the spherical mirror is any straight line that passes by .... and any point on its surface except....................

80. The short-sighted person needs a medical eye glasses with .... lenses .

81. vision defect which is due to a shortness in the radius of the eyeball is called ....

82. A point inside the lens lies on the principal axis in the mid distance between its faces is called ....

83. point that is in the middle of the reflecting surface of the concave mirror is called ......

84. The phenomenon of the light bouncing off in the same medium when it meets the reflecting surface is called ....

85. The scientist who established the crossing star theory is ....

86. The Sun takes about .... years to complete one rotation around ....

87. The stars move in fixed orbits around the center of the ....

88. The two gases which produced galaxies, stars through millions of years are .... and ....

89. The founder of nebular theory is ....

✸(4) Correct the underlined words:

1	When a moving car covers equal distances at equal periods of time , so it moves with a **relative** speed.	....
2	The solar system includes **nine** planets revolve around the Sun.	....
3	The chromosome consists of two chromatids connected at the **cytoplasm**.	....
4	Nebular theory suggested that the solar system originated from a glowing gaseous sphere revolving around the **Sun**.	....
5	The two gases which produced the galaxies, stars and universe over millions of years are helium and **nitrogen**.	....
6	The relative speed of a moving car to an observer at rest is **less than** the real speed .	....
7	If the angle between the reflected light ray and the reflecting surface is 40°, the angle of incidence equals **40°** .	....
8	Reproduction by spore propagation occurs in **paramecium**.	....
9	Meiosis happens in the **somatic cells.**	....
10	The formed image by the plane mirror is **real and inverted.**	....
11	The Sun takes about **100** million years to complete one rotation around the center of the galaxy.	....
12	If the speedometer points to 72, this is equivalent to **15** m/s.	....
13	In **convex** mirror, the image is inverted and equal to the object.	....
14	Many scientists believe that the universe emerged from a massive explosion **500 thousand years** ago .	....
15	The chromosomes chemically consists of nuclear acid called (DNA) and **fats**.	....
16	If the radius of curvature of a concave mirror equals 20 cm. its focal length will be **30** cm.	....
17	In meiotic cell division, Crossing over phenomenon occurs at the end of **Anaphase 1**.	....
18	The scientist **laplace** assumed the modern theory about the origin of solar system.	....
19	Concave lens **converges** the light rays that falling on its surface.	....
20	Sudden violent **chemical** reactions occur within the star which led to its explosion.	....
21	Reproduction by sporogony occurs in **starfish**.	....

22	The long-sightedness is corrected by using **concave mirror.**	....
23	Amoeba reproduces by **budding**.	....
24	The formed image of an object that is put at **the centre of curvature** for a convex lens is virtual enlarged.	....
25	The spindle fibers are formed in the plant cell from the **centrosome**.	....
26	Chromosomes are arranged at the middle of the cell in the **telophase**.	....
27	Contact lenses can stick to eye **iris** and can be removed easily.	....
28	**Acceleration** is the actual length of the path that a moving object takes from the starting point of movement to the end point.	....
29	The clear vision for a normal vision person remains, if the object comes closer at a distance not less than **60** cm.	....
30	A phase where some important biological processes occur to prepare the cell for division is called **prophase**.	....
31	Velocity is the quantity that we can identify it accurately by knowing its **magnitude only.**	....
32	If an object is put in front of concave mirror at **focus**, the formed image is real, inverted and equal to the object.	....
33	**Crossing star** is a glowing gaseous sphere revolving around itself, from which the solar system was originated.	....
34	**Average speed** is the speed of a moving object relative to a constant or a moving observer.	....
35	The chromosome consists of two chromatids connected together at the **nucleus**	....
36	The speed of a car can be identified directly by using the **compass**.	....
37	In the universe , groups of **planets** are gathered to form the galaxies.	....
38	When the light ray falls by an angle of **30°** on the reflecting surface, so the reflected ray will be perpendicular on the reflecting surface.	....
39	The parent individual disappears during the reproduction by **sporogony**.	....
40	**Relative speed** represents the regular speed by which the moving object moves to cover the equal distance at the same period of time.	....
41	The universe emerged from the particles of **oxygen and nitrogen.**	....
42	The spindle fibers in the animal cell is formed from **condensing the cytoplasm.**	....

43	The lens is a transparent medium that **reflects** the light.	....
44	In plane mirror the object distance from the mirror is **larger than** the image distance.	....
45	**Asexual** reproduction is a source of genetic variation.	....
46	The Sun takes about **250** million years to complete one rotation around the center of the galaxy.	....
47	If two cars moving in the same direction at the same speed equal 120 m/sec., so the relative speed equal **60 m/sec**.	....
48	**The scientist Isaac Newton** published a research entitled "world order" and that was in 1796.	....
49	**Mitotic cell division (mitosis)** aims to produce gametes.	....
50	Yeast fungus reproduce asexually by **regeneration**.	....
51	The lens is a transparent medium that **reflects** the light and defined with two spherical surfaces.	....
52	Amoeba reproduces by **Budding**.	....
53	The old stars are gather in the **edges** of the galaxy.	....
54	The word ambulance is written on ambulance cars **minimized**.	....
55	Number of chromosomes in an ovum cell containing **double** number of chromosomes in the one of liver cells.	....
56	The **force** is the length of the shortest straight line between two position.	....
57	It is a cell produced due to fertilization called **tetrad** .	....
58	**The lion** is considered one of the fastest wild animals.	....
59	The chromosome chemically consists of nuclear acid called DNA and **starch**.	....
60	**The irregular speed** is the value of displacement at a unit time and is a vector quantity.	....
61	**The crossing star** is the largest star that can be seen from the surface of the Earth.	....
62	In the Big Bang theory explains that the universe is formed by the cohesion of **Oxygen** and Nitrogen particles.	....
63	Chromosomes pairs arranged on the cell's equator in **anaphase 1.**	....
64	When the object covers equal distance at equal periods of time, this means that the object move with a **negative** acceleration.	....

65	the solar system is located in one of the **circular** arms of the Milky Way galaxy.	....
66	When putting a body on a distance of 16 cm from a concave mirror its focal length is 12 cm, then the image formed will be **virtual upright** and magnified image.	....
67	Pilots take in consideration the **uniform speed** of the wind.	....
68	Displacement is described by magnitude and **time**.	....
69	a boat starts to move from rest till its speed becomes 2.5 m./sec. through 5 sec. this means that it moves with acceleration **10** m/sec^2	....
70	The total distance covered by a moving body divided by the total time taken equals the **non-uniform speed.**	....
71	The moving car with a certain speed seems to be at **high** speed to the moving observer with the same speed and the same direction.	....
72	**Acceleration** is the actual length of the path that a moving object takes from the starting point of movement to the end point.	....
73	The **incident light** ray is the light ray that bounces from the reflecting surface.	....
74	A concave mirror of focal length 10 cm , so its radius of curvature equals **5 cm.**	....
75	**The focus** is a point inside the lens placed on the principal axis in the mid distance between its faces.	....
76	The short-sightedness is treated by using **a convex mirror.**	....
77	When an object is placed at the centre of curvature of the mirror, the formed image is real , inverted and **enlarged**.	....
78	The **real** image cannot be received on a screen.	....
79	A spherical mirror whose diameter is 40 cm, so its focal length equals **40 cm.**	....
80	The founder of the modem theory of the evolution of the solar system is **Plank**.	....
81	The founder of crossing star theory is **Newton**.	....
82	**The crossing star** is a glowing gaseous sphere that rotates around itself.	....
83	Eight planets including the Earth rotate around the **galaxy**.	....

✺(5) Give reason for:

1. Displacement is a vector quantity.

   ....

2. focal length of a concave mirror can be determined by knowing its radius of curvature.

   ....

3. The continuous expansion of space.

   ....

4. The image formed by the convex mirror can't be received on a screen.

   ....

5. The formed image by the convex mirror is always virtual.

   ....

6. Occurrence of interphase before starting the cell division .

   ....

7. When the object is placed at the focus of a convex lens, the image is not formed.

   ....

8. There are no new races of grapes , when they reproduce by vegetative reproduction.

   ....

9. The nebula lost its sphere form and became in a form of a flat rotating disk.

   ....

10. The body which moves at acceleration can't move at a regular speed.

    ....

11. Shrinking of spindle fibers during the anaphase.

    ....

12. (Distance - Time) graph of an object that moves at uniform speed is a straight line passing through the origin point.

    ....

13. Asexual reproduction in living organisms produces individuals identical in genetic

    structure.

    ....

14. Word ambulance is written in a converted (laterally inverted) way on the ambulance car.

    ....

15. The continues expansion of space.

....

16. Moving cars cannot move inside crowded town all the time by uniform (regular) speed.

....

17. The short-sightedness is corrected by using a concave lens.

....

18. Cellular division begins with interphase before starting mitosis division.

....

19. The lens had two centers of curvature (C1 and C2).

....

20. Binary fission is considered a mitotic division.

....

21. The force is a vector quantity.

....

22. Uniform speed for a car hard to done practically.

....

23. Crossing over phenomenon is an important factor in genetic variation among individuals of the same species.

....

24. Every galaxy has a definite shape differs of other galaxies.

....

25. Meiotic division is called by reduction division.

....

26. Pilots take in consideration the velocity of the wind.

....

27. The image formed by a plane mirror cannot be received on the screen.

....

28. When you look at the mirror you see your face image.

....

29. Mitosis is important for children, unlike the meiosis.

....

30. The perpendicular incident light ray on plane mirror reflects on itself.

....

31. Cataract disease infects the eye.

....

32. Sexual reproduction is a source of genetic variation .

....

33. There are no new races (new individual with other trait) of plants, when they reproduce by vegetative reproduction.

....

34. Occurrence of interphase before starting the mitosis cell division.

....

35. The constancy of the planets in their orbits around the Sun.

....

36. The concave lens is used to treat a short-sightedness person.

....

37. The word "AMBULANCE" is written laterally inverted way on the ambulance car.

....

38. The Sun escaped from the gravity of the huge star in the crossing star theory.

....

39. The number of chromosomes is constant in the same species which reproduce sexually.

....

40. In short-sightedness , the retina is far from the eye lens.

....

41. The object which moves at regular speed , its acceleration equals zero.

....

42. Distance is a scalar physical quantity.

....

43. Speed of a moving body increases by decreasing time needed to cover a certain distance.

....

44. The formed image by the convex mirror is always virtual.

....

45. The infection of the eye with the cataract.

....

✹(6) What happen if:

1. Absence of centrosome in the animal cell.

   ....

2. A light ray is incident passing through the optical center of a convex lens.

   ....

3. Less convexity of the eye lens surfaces.

   ....

4. Approaching of a huge star to the Sun according to the crossing star theory.

   ....

5. When an injured liver or cutting a part of it.

   ....

6. To the displacement of a moving body when it returns back to its starting point.

   ....

7. To the speed of a body if it covers the same distance in half the time.

   ....

8. When rupturing sporangium in bread mound fungus.

   ....

9. To the distance between the image and the plane mirror when the body becomes closer to the mirror.

   ....

10. Reproductive cells are divided by meiosis.

    ....

11. The initial speed of a moving body is greater than the final speed.

    ....

12. The combination of the male gamete and female gamete.

    ....

13. If the starfish loses one of its arms containing a part of its central disc .

    ....

14. If the incident light ray falls parallel to the principal axis of concave mirror.

    ....

15. The organization and arrangements of stars in the galaxy were changed.

....

16. Focusing laser on the gold Nano-particles in the cells infected by cancer.

....

17. A light ray is incident passing through the center of curvature of a concave mirror.

....

18. A light ray passes through the optical center of the lens.

....

19. Putting a yeast fungus in a warm sugary solution.

....

20. The nebula gradually lost its heat (from point of view of Laplace scientist).

....

21. The liver gets injured or apart of it is cut.

....

22. The parts of the inner chromatids are exchanged in the first prophase.

....

23. An object is put at the focus of a convex lens.

....

24. The starfish misses one of its arms and it contains a part of its central disk.

....

25. The centrosome disappears from the animal cell .

....

26. The nebula loses its heat in the assumption of Laplace.

....

27. Reflection of a light ray falls on a concave mirror to pass with its focus.

....

28. A body is placed at a distance less than the focal length of a concave mirror.

....

29. The shortness of the diameter of the eyeball.

....

✹(7) Define each of the following :

1. The scalar physical quantity.

   ....

   ....

2. The crossing over phenomenon.

   ....

   ....

3. The optical center of the lens.

   ....

   ....

4. The binary fission.

   ....

   ....

5. Contact lens.

   ....

   ....

6. Tetrad.

   ....

   ....

7. The focal length of a lens.

   ....

   ....

8. Zygote.

   ....

   ....

9. Fertilization.

   ....

   ....

10. Irregular speed.

    ....

    ....

11. The radius of curvature of a mirror.

....

....

12. Reproduction by sporogony (spore propagation).

....

....

13. Average speed.

....

....

14. Angle of incidence.

....

....

15. Regular (uniform) speed.

....

....

16. The pole of the mirror.

....

....

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✵(8) Problems

1

An object moves in a straight line northward at a speed of 5 m/sec. and its speed reaches 20 m/sec through 3 seconds.

Calculate the following:

l. The velocity after 3 seconds.

2. The acceleration of the moving object.

....

....

....

2

Two race cars, the first car moves at a speed of 80 km/h, while the second car moves at a speed of 120 km/h, in the same direction. Mention the following :

1. The relative speed of the first car relative to an observer standing on one side of road.

2. The relative speed of the second car relative to passenger in the first car.

....

....

3

A car moved from rest and its speed became 25 m/s. during 10 seconds.

Calculate its acceleration.

....

....

....

4

The opposite figure represents one of meiotic division (meiosis) phases :

1 . What is the name of this phase ?

2. Draw the phase next to this phase.

....

....

....

5

From the opposite graph which represents the motion of a ca
1. value of the maximum speed of the car equals .... m/s.
2. The kind of acceleration in part (yz) is ....

Speed (m/s)
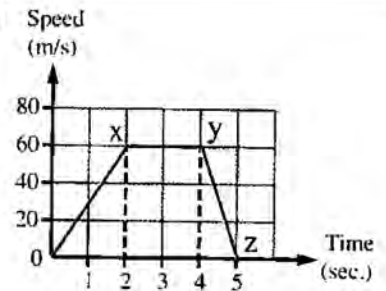
6

In the following two figures :
What is the value of the angle of reflection of the incident rays in figures (A) and (B)?
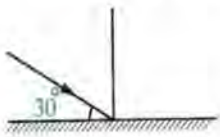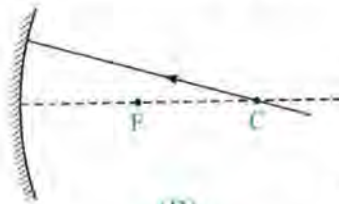
(A)   (B)

....

....

....

7

The opposite figure shows a vital phenomenon :
1. What is the name of this phenomenon?
2. Mention the name of the phase in which this phenomenon occurs and mention the type of its division.
3. What is the importance of its occurrence ?

....

....

....
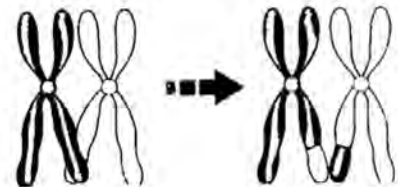
8

Write the assumptions of crossing star theory for the origin of the solar system
(4 assumptions only).

....

....

....

....

9

In the opposite figure, two eye lenses for two eyes equal in eye diameter for two different persons.

Which of them has short-sightedness an d why ?

....

....

....

(A)   (B)
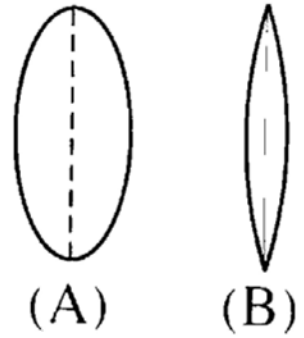
10

A car starts to move from rest in straight line , its speed reaches 12 m/sec. after 4 sec.
Calculate the acceleration of the car, and **what** is the type of this acceleration.

....

....

....

11

Explain by drawing :

The formed image by convex lens, when the body at a distance greater than double the focal length. Then write the properties of the formed image.

....

....

....

....

12

Calculate the actual speed of the car whose relative speed is (80 km/h) relative to an observer moving in opposite direction at a speed of (30 km/h).

....

....

....

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13

An object is placed at a distance of (8 cm) from a concave lens has a focal length (2 cm) :
1. Draw the direction of the ray that eye sees the image.
2. Mention the properties of image formed.

....

....

....

....

14

1. Copy the figure then draw the rays that form the image
   of the object.

2. The point (X) refers to ....

C   F   F   C   X
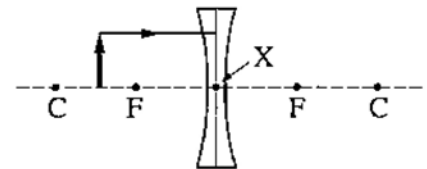
15

A person moves in the path (a b c d e) as shown in figure, he covered a distance of 10 m.
northward in 2 seconds, then he covers 30 m. eastward in 10 seconds. and followed by
40 m. southward in 8 seconds, finally 30 m. westward in 5 sec.

1. Calculate the displacement of the person
   from the start of motion to end.

2. In which part of the person motion,
   his speed was the least ?

....

....

....

....

....

Mr.Ahmed ElBasha
Mob :   **01153233911**
Whatsapp : 01003494547
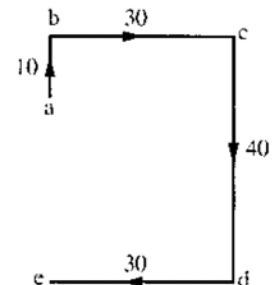
16

In the figure shown, an object is placed at the centre of curvature of one face of a convex lens of focal length 6 cm. Then, a plane mirror is placed at the other side of the object at 8 cm. from the object. Copy the diagram in your answer sheet and answer :

1. Draw the path of light rays incident on the lens to form an image on a screen in front of the lens.

2. Calculate the distance between the two images formed by the lens and the mirror.

....

....

....

....
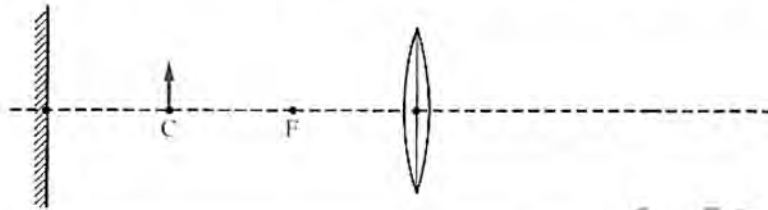
17

The figure in front of you shows a phase of cell division. Answer the following :
1. What is the type of this division ?
2. What is the name of this phase ?
3. What is the importance of this type of division ?

....

....

....
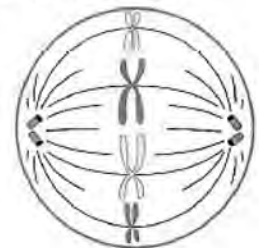
18

A car moved from Banha to Cairo at a distance of 40 km in 30 minutes , then it returns back from Cairo to Banha in the same time. Calculate (in km/h) :
1. The car velocity from the beginning to the end of the journey.
2. The average speed of the car during the total time.

....

....

....

19

Mention the properties of the formed image in each of the following cases :

1. An object is placed in front of a convex mirror.

2. An object is placed in front of a convex lens at a distance less than its focal length .

3. An object placed at the focus of a convex lens.

....

....

....

....

20

In the opposite figure :

Two cars moved at the same time from (A) to (D), the first car takes the pass (ABCD) in 20 sec. and the second car takes the pass (AD) with regular speed 20 m/sec.

1. Which of the two cars reach first to point (D) .

2. Calculate the velocity of the first car.

....

....

....

....

....
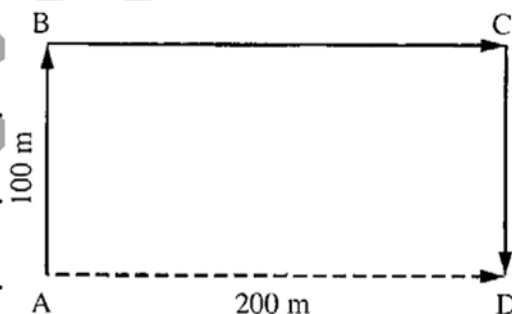
21

When each of the following values equal "Zero" :

1. Reflecting angle of a light ray incident on a plane mirror.

2. The velocity of a moving object.

3. Reflecting angle for an incident ray falls on reflecting surface of a cancave mirror.

....

....

....

....

....

....

22

An object is placed at a distance of 30 cm from a concave mirror with a radius of curvature 40 cm.

1. Calculate the focal length of the mirror.

2. Show by drawing the path of rays that show the formed image in this case.

....

....

....

....

23

Two cells are divided, one of them in the plant stem and the other in the plant ovary, if you know the number of chromosomes in each of them is 6 pairs of chromosomes, mention:

1. The kind of cell division in each cell.

2. The number of chromosomes in each resulted cell.

....

....

24

In the opposite figure :

1. Complete the path of the rays to form an image for the object.

2. Mention the properties of the formed image.

....

....

....

....
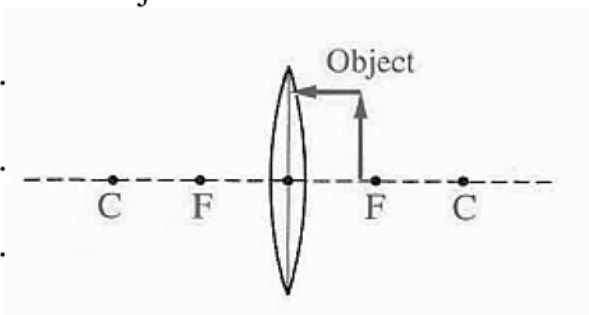
25

A person moves from point (A) to point (B), then changes his direction to point (C) through 10 seconds, Calculate :

1. The total distance covered by the person.

2. The displacement done by the person.

3. The velocity.

....

....
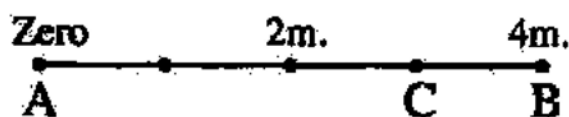
26

The opposite figure represents the crossing over phenomenon, Answer the following :
1. What happens in this phenomenon ?
2. What is the name of the phase in which this phenomenon occurs?
3. Draw the following phase to the phase in which this phenomenon occurs.

....

....

....

....

....
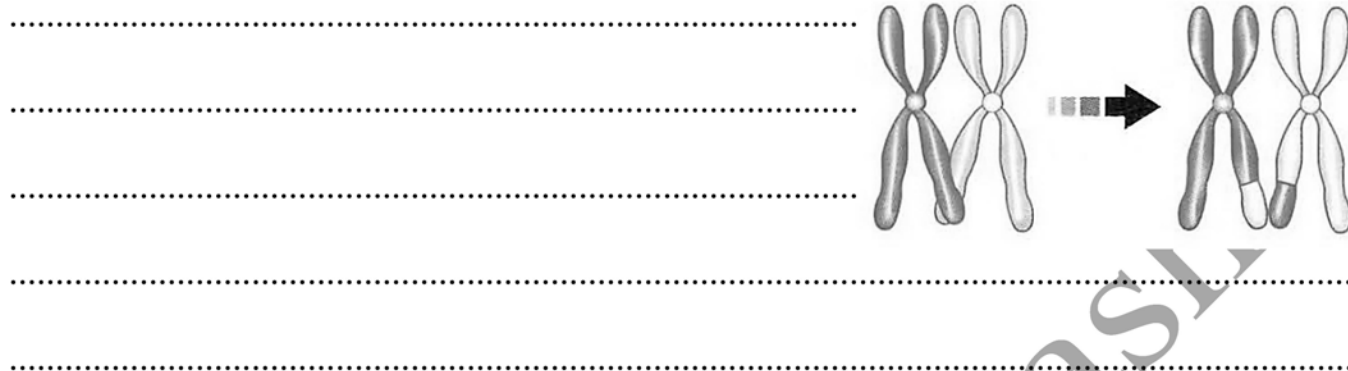
27

The opposite figure :
1. What is the name of this phenomenon in front of you ?
2. What is the importance of its occurrence.
3. Mention name of phase that this phenomenon occurs ?

....

....

28

Draw the figure in your answer paper, then :
1. Complete the path of the incident rays on the mirror from the object.
2. Mention the characteristics of the formed image and its position.

....

....

....
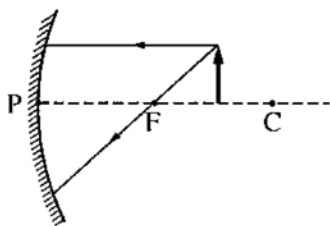
29

The opposite figure represents one of the division phases:
1. What is the name of this phase and the type of division ?
2. What is the name of next phase that follow it.

....

....

30

Describe the motion of the object in each of the following graph :

Distance (m) / Time (s)

(1)

Distance (m) / Time (s)
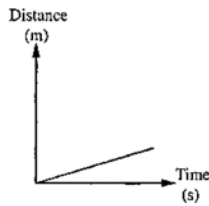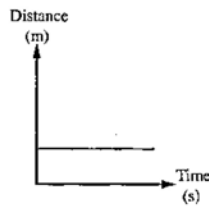
(2)

....

....

....

....

31

Draw the figure in your answer paper then complete to obtain virtual, upright and enlarged image for the object.

F   F

....

....

....

....
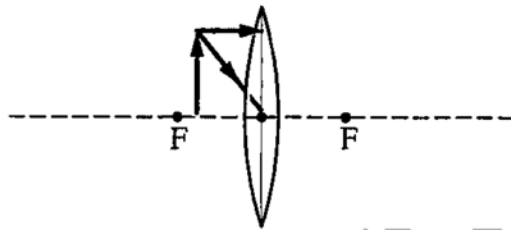
32

The opposite graph represents the (distance - time) graph for the movement of two objects A , B From the graph, answer the following :

1. What is the kind of speed of the two objects ?

2. Calculate the ratio between the speed of object A and the speed of object B

....

....

....

....

....

Distance (m) / Time (second)
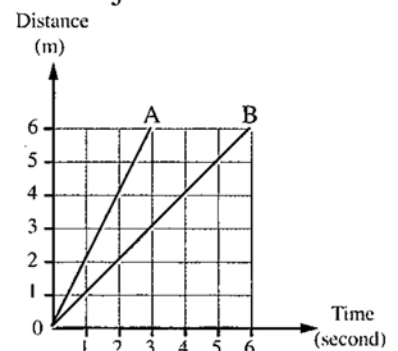
33

The opposite figure represents one of the important process to complete the reproduction. Answer the following :

1. What is the name of the process that number (3) refers to and what is the name of the produced cell ?
2. What is the importance of forming the cell number (3) ?
3. What is the kind of division in part (4)?
4. What is the number of chromosomes in the cell number (1)?

.... (1)

....

....

.... (2)

....   (3)   (4)

....
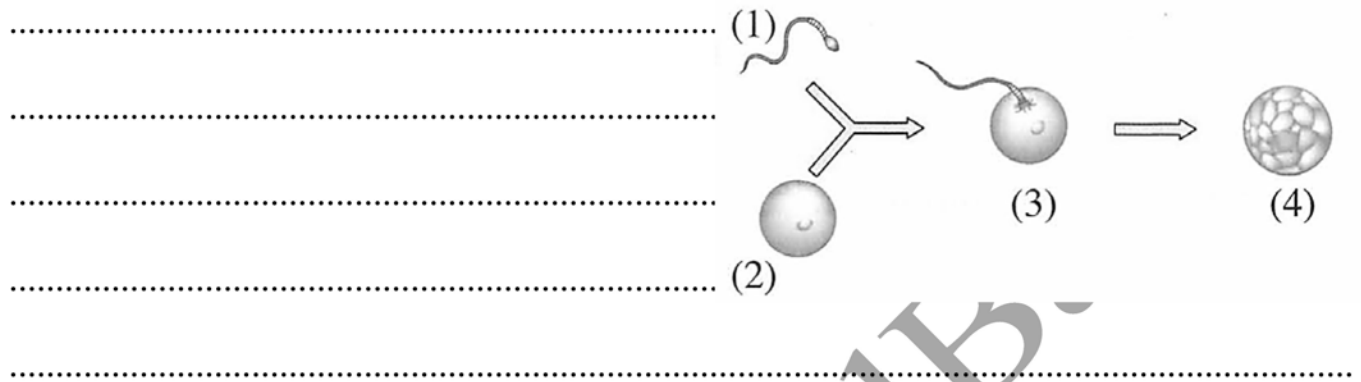
34

An object is placed at a distance of 5 cm from a convex lens its focal length is 3 cm. Show by drawing the position of the formed image and mention the properties of this image, **by drawing two light rays only.**

....

....

....

....

....
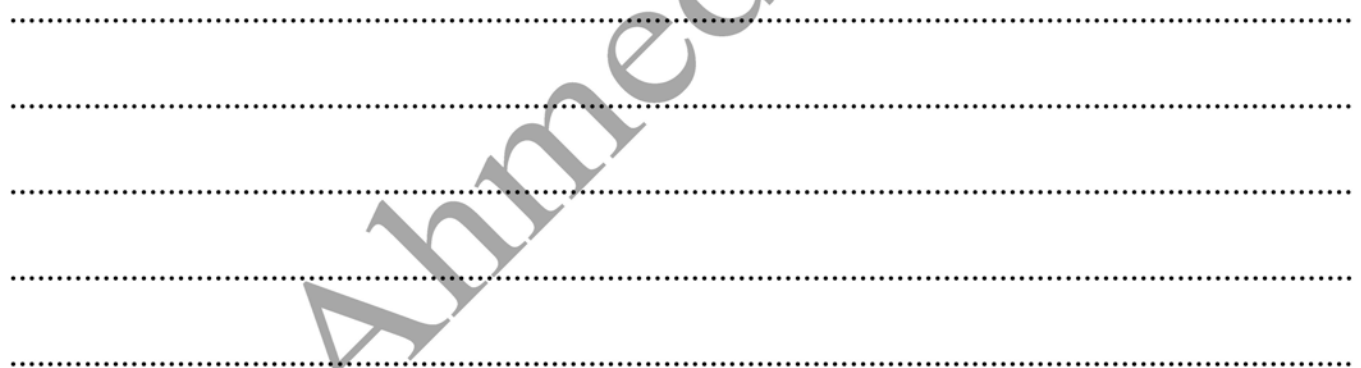
35

"A car starts movement from rest until its speed reaches 25 m/s after 10 seconds."
1. Calculate the value of acceleration.
2. What kind is the acceleration ?

....

....

....
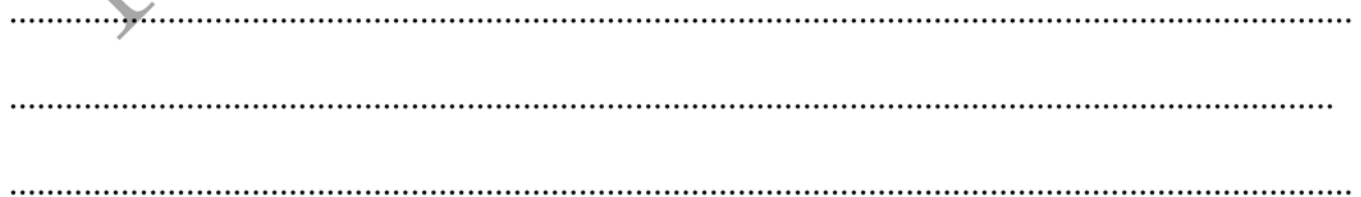
36

An object moves according to the graphical relation shown in the opposite figure,
calculate :
1. The speed of the object's motion and mention its kind.
2. The time that the object takes to cover a distance of 15 meters.
3. The distance that the object covers in 4 seconds.

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....
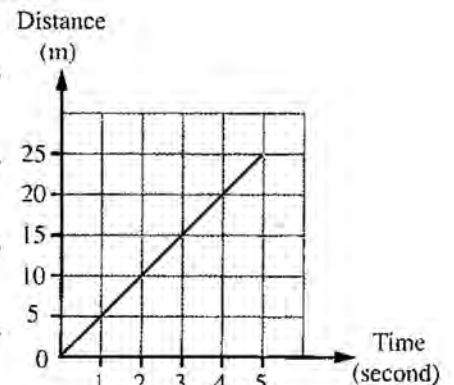
37

In the shows figure :
1. Complete the ray to get the image.
2. Mention the properties of the image.
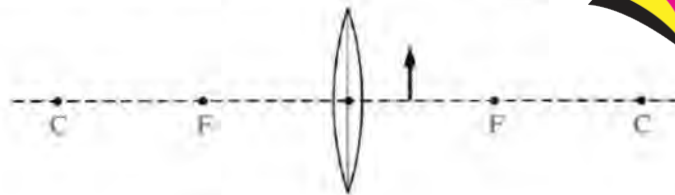
38

Through your study the stages of mitotic division answer the following :
1. Name the phase that preceding this phase the figure.
2. In which phase the centromere of each chromosome is split lengthwise into two halves ?
3. In which phase the spindle fibers disappear ?
4. What the importance of interphase?

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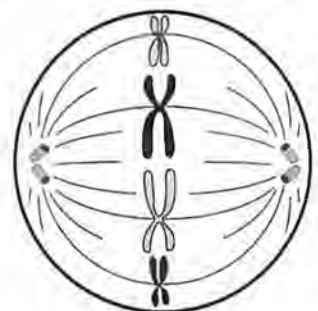
39

In the opposite figure , that represents the movement
of an object from point (A) to point (C) passing by
point (B), **Calculate the following :**
1. Speed.
2. Velocity.

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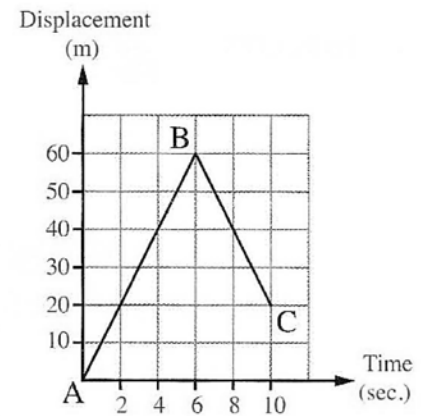
40

Look at the following figure, then answer the following :

(1)   (2)   (3)   (4)
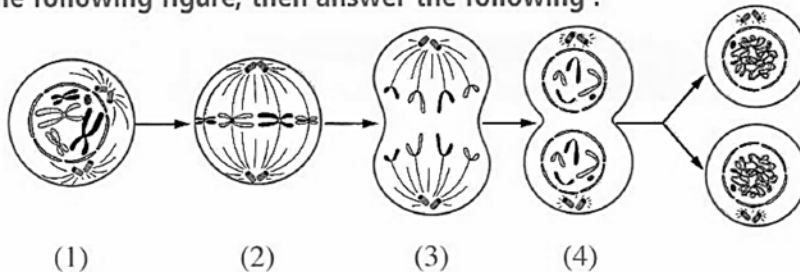
1. What is the kind of cell division in this figure ?

2. What is the name of phases number (2) and (3).

3. What will disappear in phase number (1).

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41

**A racer covered 50 meters northward within 30 seconds then 100 meters eastward
within 60 seconds then 50 meters southward within 10 seconds, and then returns
back to the start point within 40 seconds :**

1. Calculate the total distance that the racer moved ?

2. What is the average speed of the racer?

3. Calculate the displacement ?

....

....

....

Model answer

✴ (1) Write the scientific term :

1. Speed
2. Fertilization
3. Universe
4. Uniform speed
5. Concave lens
6. Vegetative reproduction
7. Galaxy
8. Angle of reflection
9. Fertilization
10. Relative speed
11. Gravity (attraction force)
12. Reproductive cell
13. Motion
14. Optical center
15. Universe
16. Light reflection
17. Solar system
18. Long-sightedness
19. Average speed
20. Uniform acceleration
21. Reproduction process
22. Angle of incidence
23. DNA
24. Convex mirror
25. Velocity
26. Galaxy cluster
27. Regeneration
28. Centromere
29. Secondary axis
30. Radius
31. Non-uniform speed
32. Relative speed
33. Concave mirror
34. Optical center
35. DNA
36. Light reflection
37. Principal axis of mirror
38. Nebula
39. Spherical mirror
40. Motion
41. Pole of mirror
42. Nucleus
43. Second law
44. Fertilization
45. Average speed
46. Binary fission
47. Interphase
48. Regeneration
49. Big bang
50. Tumor
51. Reproduction process
52. Contact lens
53. Uniform speed
54. Cataract
55. Velocity
56. Chromosome
57. Speed
58. Spindle fiber
59. Virtual image
60. Crossing star theory
61. Nebula
62. Mitotic
63. Distance
64. Solar System
65. Principal axis
66. Interphase
67. Velocity
68. Centromere
69. Vegetative reproduction
70. Star explosion phenomenon
71. Relative speed
72. Average speed
73. Scalar quantity
74. Concave lens
75. Concave mirror
76. First law
77. Convex mirror
78. Principal axis of lens
79. Radius
80. Secondary axis
81. Focus
82. Short-sightedness
83. Nebula
84. Sun
85. Laplace
86. Crossing star theory
87. Light year
88. Universe
89. Big bang
90. Big bang

✴(2) Choose the right answer:

1. A	13. D	25. D	37. B	49. D	61. A	71. B
2. D	14. C	26. D	38. A	50. C	62. A	72. C
3. B	15. B	27. B	39. D	51. A	63. B	73. A
4. B	16. C	28. B	40. C	52. A	64. B	74. B
5. B	17. B	29. A	41. D	53. A	65. D	75. C
6. C	18. C	30. B	42. C	54. C	66. C	76. B
7. C	19. C	31. D	43. A	55. D	67. A	77. B
8. D	20. B	32. A	44. C	56. C	68. C	78. A
9. D	21. D	33. A	45. B	57. C	69. C	79. C
10. C	22. D	34. D	46. B	58. A	70. A	80. C
11. B	23. B	35. A	47. D	59. C		
12. D	24. B	36. C	48. D	60. A		

✱(3) Complete the following :

1. Milky way
2. Somatic
3. Scalar – vector
4. Alfred hale
5. Speed
6. Focus
7. Gaseous
8. Convex
9. Mitosis
10. Laplace
11. Prophase
12. Galaxy
13. Vector – scalar
14. Spiral
15. Mitotic – meiotic
16. Center
17. Binary fission
18. Parallel to principal axis
19. Scalar
20. Mass – force
21. Spindle fiber
22. Inner chromatid
23. Testis - ovary
24. Long-sightedness – convex
25. Distance – time
26. Universe – solar system
27. Centrosome - cytoplasm
28. Distance
29. Milky way
30. Virtual
31. Prophase
32. Motion
33. Medical glasses – plastic
34. Converge – diverge
35. Milky way – edge of galaxy
36. Straight , curved
37. Nucleus – chromosome
38. Concave
39. Budding – regeneration
40. Alfred Hale
41. gold
42. Concave
43. Protein
44. Centrosome – condensing of cytoplasm
45. Hydra
46. Pole of mirror
47. Velocity
48. m/s - m/s^2
49. Prophase I – first meiotic
50. Concave – convex
51. Milky way
52. Asexual
53. Contact lens
54. Focus
55. Opposite
56. Prophase I
57. Eight
58. Vector
59. 40
60. Convex – concave
61. Budding – binary fission
62. Real
63. Galaxy
64. m/s^2
65. budding
66. Convex
67. Displacement
68. Hubble
69. Prophase
70. Radius
71. Displacement
72. Vector – scalar
73. Distance – time
74. Straight
75. Distance
76. Zero
77. Motion
78. Parallel
79. Center of curvature – pole of mirror
80. Concave
81. Long-sightedness
82. Optical center
83. Pole of mirror
84. Light reflection
85. Chamberlain and moulton
86. 220 Million – milky way
87. Galaxy
88. Hydrogen and helium
89. Laplace

✱(4) Correct the underlined words:

1. Uniform
2. Eight
3. Centromere
4. Itself
5. Hydrogen
6. Equal
7. 50
8. Mushroom
9. Reproductive cell
10. Virtual and erect
11. 220
12. 20
13. Concave
14. 15000 million
15. Protein
16. 10
17. Prophase I
18. Alfred Hale
19. Diverge
20. Nuclear
21. Binary fission
22. Convex lens
23. Binary fission
24. Less than focus
25. Condensing of cytoplasm
26. Metaphase
27. Cornea
28. Distance
29. 25
30. Interphase
31. Magnitude and direction
32. Center of curvature
33. Nebula
34. Relative speed
35. Centromere
36. Speedometer
37. Stars
38. Zero
39. Binary fission
40. Uniform speed
41. Hydrogen and helium
42. Centrosome
43. Refract
44. Equal
45. Sexual
46. 220
47. zero
48. Laplace
49. Meiotic cell devision
50. Budding
51. Refract
52. Binary fission
53. Center
54. Laterally inverted
55. Half
56. Displacement
57. Zygote
58. Cheetah
59. Protein
60. Velocity
61. Sun
62. Hydrogen
63. Metaphase I
64. Zero
65. Spiral
66. Real – inverted
67. Direction
68. Direction
69. 0.5
70. Average
71. Low
72. Distance
73. Reflected ray
74. 20
75. Optical center
76. Concave lens
77. Equal to object
78. Virtual
79. 10
80. Alfred Hale
81. Chamberlain and moulton
82. Nebula
83. Sun

✹(5) Give reason for:

1. Because they have magnitude and direction
2. Because focal length (f) =1/2 x radius of curvature (r)
3. Due to the movement of galaxies apart
4. Because it is a virtual image.
5. Because it is formed behind the mirror from the intersection of the extensions of the reflected light rays and it can't be received on a screen.
6. To prepare the cell for division through some important biological processes where the amount of genetic material duplicates.
7. Because the penetrating rays from a lens don't meet and pass through a parallel way at infinity.
8. Because vegetative reproduction depends on mitotic division, in which the produced cells contain a full copy of the genetic material of the parent cells.
9. because its revolving speed around itself increased.
10. Because its speed changes by passing time.
11. To form two identical groups of chromosomes at each pole of the cell.
12. Because the distance is directly proportional to the time when the object moves at a constant speed.
13. Because it occurs through one parental individual and through a mitotic division as the new individual gets a genetic copy identical to the parent.
14. Because the mirrors of the cars in front of the ambulance car, form a laterally inverted image for this word, and thus it appears laterally corrected to the drivers.
15. Due to the movement of galaxies apart.
16. Because its speed changes by passing time.
17. Because the concave lens diverges the rays corning from a far object, so the image is formed on the retina
18. To prepare the cell for division through some important biological processes where the amount of genetic material duplicates.
19. Because they have two circular surfaces, each surface has a center.
20. Because two identical cells are produced, each one is identical to the original cell.
21. Because they have magnitude and direction
22. Because its speed changes by passing time.
23. Because it contributes in genes exchanging between the two homologous chromosome's chromatids and distributing them randomly in the gametes.
24. Because each galaxy has distinctive shape according to harmony and order of the groups of stars in it.
25. Because the produced cells contain half the number of chromosomes of the original cell.
26. Because the direction of the wind affects the velocity of the plane and hence the time of the trip and the amount of the fuel consumed.
27. Because it is a virtual image.
28. Due .to light reflection.
29. Because mitosis division plays an important role in growth which the body of children needs, while meiosis division aims to the production of gametes in adults only.
30. Because the angle of incidence equals the angle of reflection equals zero.
31. Due to the following reasons : - Old age. - Illness. - Side effects of drugs. - Genetic readiness.
32. Due to the occurrence of the crossing over phenomenon during it.
33. Because vegetative reproduction depends on mitotic division, in which the produced cells contain a full copy of the genetic material of the parent cells.
34. To prepare the cell for division through some important biological processes where the amount of genetic material duplicates.
35. Due to the Sun gravity.
36. Because concave lens diverges the rays corning from a far object, so the image is formed on the retina.
37. Because the mirrors of the cars in front of the ambulance car, form a laterally inverted image for this word, and thus it appears laterally corrected to the drivers.
38. Due to the explosion in the expanded part of the Sun that faces the huge star.

39. Due to meiosis division (which reduce the number of chromosomes) in gametes, then the combination of male gamete (N) and female gamete (N) to form a zygote which contains the whole number (diploid number) of chromosomes (2N).

40. Due to the increase in the eyeball diameter.

41. Because its speed doesn't change by passing time (ΔV =Zero).

42. Because they have magnitude only and have no direction

43. Because speed = d/t so, speed is inversely proportional to the time.

44. Because it is formed behind the mirror from the intersection of the extensions of the reflected light rays and it can't be received on a screen

45. Due to the following reasons : - Old age. - Illness. - Side effects of drugs. - Genetic readiness.

✺(6) What happen if:
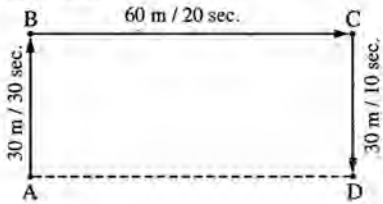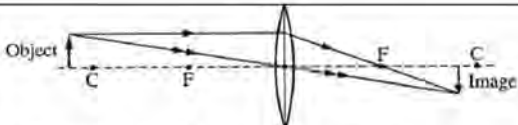
1. The spindle fibers are not formed therefore the cell division doesn't completed.
2. It passes through the lens without refraction.
3. This causes long-sightedness
4. The star attracted the Sun to it which led to a great expansion in the part of the Sun facing it.
5. The remaining cells undergo many mitotic divisions to compensate the missing part.
6. The displacement equal zero
7. It will increase to double
8. A large number of spores are released.
9. The image will move close to the mirror
10. They will produce the gametes that contain the half number of chromosomes.
11. The body speed decreases by passing time and the movement is described as a decelerating motion.
12. A zygote is produced which when it grows, it gives a new offspring with traits of its parents
13. This part grows forming a new individual
14. It reflects passing through the focus.
15. The shape of galaxy is changed.
16. the nano-molecules of gold which stuck the surface of cancerous cell absorb the light of laser and convert it into heat which leads to burn and kill the infected cell.
17. It reflects on itself.
18. It passes through the lens without refraction.
19. The yeast fungus reproduces asexually by budding forming a new fungus separated from the parent cell or it remains connected to the parent cell forming a colony.
20. Its size contracted and its revolving speed around itself increased
21. The remaining cells undergo many mitotic divisions to compensate the missing part
22. Crossing over phenomenon occurs.
23. No image is formed.
24. The starfish compensates its lost arm and the arm forms new individual if it contains a part of the central disc.
25. The spindle fibers are not formed therefore the cell division doesn't completed.
26. Its size contracted and its revolving speed around itself increased
27. It will reflection parallel to principle axis
28. A virtual , erect and magnified image is formed behind the mirror
29. This causes the shortness of the radius of the eye sphere, thus the retina is close to the eye lens and this causes long-sightedness

✲(7) **Define each of the following :**

1.   It is the physical quantity that has magnitude only and has no direction.

2.   It is a phenomenon that takes place at the end of prophase I and, in which some parts of the two inner chromatids of each tetrad are exchanged to produce new genetic arrangements.

3.   It is a point inside the lens that lies on the principal axis in the mid distance between its faces.

4.   It is a type of asexual reproduction where the nucleus divides mitotically, then the cell splits into two identical cells

5.   They are very thin lenses made of plastic and can stick to the eye cornea by the eye fluid

6.   They are the arrangement of homologous pairs of chromosomes where each pair consists of 4 chromatids.

7.   It is the distance between the principal focus and optical center of the lens.

8.   It is a cell produced due to fertilization and it contains the complete number of chromosomes of the living organism

9.   It is the combination of a male gamete (N) and a female gamete (N) to form a zygote (2N).

10. It is the speed by which the object moves when it covers equal distances at unequal periods of time.

11. It is the radius of the sphere that the mirror is a part of it.

12. It is a type of asexual reproduction that occurs in some fungi and algae by producing spores.

13. It is the regular speed by which the object moves to cover the same distance at the same period of time.

14. It is the angle between the incident light ray and the normal.

15. It is the speed by which the object moves when it covers equal distances at equal periods of time (whether the distance and time are short).

16. It is the point that lies in the middle of the reflecting surface of the mirror.
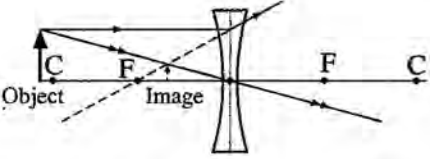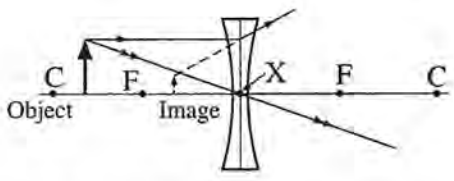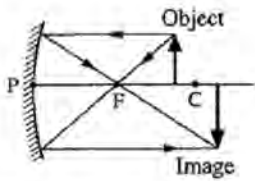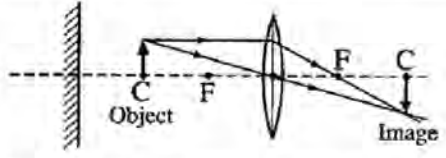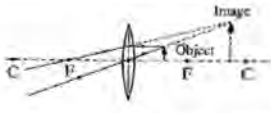
✳(8) Problems

1

1. The velocity after 3 sec is 20 m/s northward direction.
2. Acceleration (a)

$$= \frac{\text{Final speed } (V_2) - \text{Initial speed } (V_2)}{\text{Time at which change occurs } (\Delta t)}$$

$$a = \frac{20-5}{3} = \frac{15}{3} = 5 \text{ m/s}^2$$

2

1. The relative speed of the first car relative to an observer standing on one side of the race road = 80 km/h.
2. The relative speed of the second car relative to passenger in the first car = 120 − 80 = 40 km/h.

3

$$\text{Acceleration (a)} = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{\Delta t} = \frac{25-0}{10} = 2.5 \text{ m/s}^2$$

4

1. Metaphase I
2. Anaphase I

Ananphase I

5

1. 60
2. negative acceleration (Decelerating motion).

6

(A) The angle of reflection = 60°

(B) The angle of reflection = zero

7

1. Crossing over phenomenon.
2. – This phenomenon occurs at the end of prophase I.
   – The type of the division is meiotic division.
3. Its importance :
   It works on the variation of genetic traits among the members of the same species, where it contributes in genes exchanging between the two homologous chromosome's chromatids and distributing them randomly in the gametes.

8

• **Assumptions of the crossing star theory :**
  It assumed that the origin of the solar system was the Sun.

1. Another huge star (crossing star) approached to the Sun.
2. This star attracted the Sun to it which led to a great expansion in the part of the Sun facing this star.
3. **The expanded part from the Sun was exploded which led to :**
   • The Sun escaped from the gravity of that star.
   • A gaseous line was formed of a great length from the Sun to the last planets.
4. The gaseous line started to condense due to the attraction force, then it cooled forming the planets.

9

– The person who has the eye lens (A) suffers from short-sightedness.
– As the convexity of this lens face is large, so the focus nearer to the optical centre which lead to form a shorter focal length for the eye lens, so an unclear image is formed in front of the retina.

10

1. Total distance = 30 + 60 + 30 = 120 m.
2. Displacement = 60 m. in the east direction

Total time = 30 + 20 + 10

= 60 sec.

$$\text{Average velocity} = \frac{\text{Displacement}}{\text{Total time}}$$

$$\text{Average velocity} = \frac{60}{60} = 1 \text{ m/s. in the east direction.}$$

11

The properties of the formed image :
– real, inverted and diminished.

12	Actual speed = relative speed − observer's speed. $$= 80 - 30$$ $$= 50 \text{ km/h}$$

13 1.

2. The properties of the formed image : virtual, erect and diminished.

14 1.

2. The optical centre

15
1. The displacement = 40 − 10 = 30 m. To the south.

2. $V_{(ab)} = \dfrac{10}{2} = 5$ m/sec.

$V_{(bc)} = \dfrac{30}{10} = 3$ m/sec.

$V_{(cd)} = \dfrac{40}{8} = 5$ m/sec.

$V_{(de)} = \dfrac{30}{5} = 6$ m/sec.

∴ The person moves with the least possible speed in the part (bc).

16 1.

2. The distance between the two images = 12 + 12 + 8 + 8 = 40 cm.

17
1. Mitosis.   2. Metaphase.

3. – The growth of living organism.

– The compensation of the damaged cells.

18
1. Velocity $= \dfrac{\text{displacement}}{\text{time}} = \dfrac{\text{zero}}{1} = \text{zero}$

2. Average speed $= \dfrac{\text{total distance}}{\text{total time}}$

$= \dfrac{80}{1} = 80$ km/h.

19
1. Virtual, erect and diminished image always formed.

2. Virtual, erect and magnified image is formed at the same side of the object.

3. No image is formed.

20
1. The time that the second car takes

$t = \dfrac{d}{v} = \dfrac{200}{20} = 10$ sec.

∴ The second car reaches to point (D) firstly.

2. Velocity of the first car

$= \dfrac{\text{displacement}}{\text{time}} = \dfrac{200}{20} = 10$ m/sec.

21
1. When the incident light ray falls prependicular on the reflecting surface,

Incident angle = Reflecting angle = zero.

2. When the moving object returns back to the same starting point,

The displacement = zero, and so velocity = zero.

3. When the incident light ray falls passing through the centre of curvature of a concave mirror,

Incident angle = Reflecting angle = zero

22
1. Focal length $= \dfrac{r}{2} = \dfrac{40}{2} = 20$ cm

2.

23
1. In the plant stem cell: mitosis

In the ovary cell : meiosis.

2. The resulted cell from mitosis : 6 pairs

The resulted cell from meiosis : 3 pairs.

24
1.

2. The properties of the formed image
Virtual, upright and magnified.

25
1. The total distance $= \overline{AB} + \overline{BC} = 4 + 1 = 5$ m

2. Displacement $= \overline{AB} - \overline{BC} = 4 - 1 = 3$ m in the direction of east

3. The velocity $= \dfrac{\text{displacement}}{\text{time}} = \dfrac{3}{10}$

$= 0.3$ m/sec. in the direction of east

26	1. Some parts of the two inner chromatids of each tetrad are exchanged to produce new genetic arrangment. 2. Prophase 1 (at its end). 3. The drawing of metaphase 1 Metaphase I	**34**	The properties of the formed image : real, inverted and magnified.
27	1. Crossing over phenomenon. 2. It works on the variation of the genetic traits among the members of the same species. 3. Prophase 1 (at its end).	**35**	1. $a = \dfrac{V_2 - V_1}{t} = \dfrac{25 - \text{zero}}{10} = 2.5 \text{ m/sec}^2$ 2. It is a positive acceleration.
28	1. 2. The properties of the formed image, and its position : Real – inverted – magnified, at a distance greater than radius of curvature (double focal length).	**36**	1. $V = \dfrac{5}{1} = \dfrac{10}{2} = \dfrac{15}{3} = \dfrac{20}{4} = 5 \text{ m/sec.}$ It's kind is a regular speed. 2. 3 seconds 3. 20 meters
29	1. Metaphase 1 – First meiotic division. 2. Anaphase 1.	**37**	1. 2. The properties of the formed image : virtual, upright and enlarged.
30	1. The object moving with uniform speed. 2. The object is at rest.	**38**	1. prophase. 2. Anaphase. 3. Telophase. 4. The cell prepare itself for division.
31		**39**	1. Distance = AB + BC = 60 + (60 − 20) = 100 m speed $= \dfrac{d}{t} = \dfrac{100}{10} = 10 \text{ m/sec.}$ 2. Velocity $= \dfrac{\text{displacement}}{\text{time}} = \dfrac{20}{10} = 2 \text{ m/sec.}$
32	1. Both objects move with a regular speed. 2. V (of object A) $= \dfrac{4}{2} = \dfrac{2}{1} = 2 \text{ m/sec.}$ V (of object B) $= \dfrac{4}{4} = \dfrac{2}{2} = 1 \text{ m/sec.}$ V (A) : V (B) = 2 : 1	**40**	1. Mitotic division. 2. Metaphase – anaphase. 3. Nucleolus and nuclear membrane
33	1. Fertilization – zygote. 2. The zygote contains the whole number of chromosomes which present in its species, and also its genetic trait comes from two sources (male gamete and female gamete). 3. Mitosis division. 4. (N).	**41**	1. Total distance = 50 + 100 + 50 + 100 = 300 m 2. Average speed $= \dfrac{\text{total distance}}{\text{total time}} = \dfrac{300}{140}$ $= 2.14 \text{ m/sec}$ 3. Displacement = zero.